

AMERICAN DENDROBATID GROUP

Newsletter No. 15

May-June 1994

The purpose of the ADG is to develop better communication between Dendrobatid breeders in North America. It is designed, by its format and bi-monthly distribution, to provide current information and new developments in the hobby. We hope that this will aid us in solving some of the problems which confront us all. This Newsletter appears bimonthly at a cost \$10.00 per calander year. Back issues for 1992 are available for \$5.00; back issues for 1993 are available for \$10.00.

Subscriptions, comments, articles, photographs, etc. should be sent to Charles Powell (2932 Sunburst Dr., San Jose, CA 95111 Tel.: (408) 363-0926).

A SURVEY OF DENDROBATID MORTALITY AT THE PHILADELPHIA ZOOLOGICAL GARDEN

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The Philadelphia Zoo began its existence in 1859. Fifteen years later a human physician, Dr. Henry C. Chapman, began performing necropsies on some animals, but it was not until November 4, 1904 that a pathologist began regular work at the zoo. Amphibian necropsy records are available as far back as 1904, but unfortunately not every deceased amphibian was examined as mammalian and avian species were of keener interest to these early prosector (pathologists). Members of the family Dendrobatidae first arrived at the zoo in 1936, four specimens described only as *Dendrobates typographus*. Three further specimens under this name arrived in 1957 but I can find nothing to indicate what these first 7 specimens actually represented (=*D. pumilio*, Ed.). Unfortunately amphibians have been overlooked and underemphasized in zoological collections prior to the last two decades. The major portion of the historical inventory dendrobatid frogs in the Philadelphia Zoo begins in the early 1970's. As of March 1, 1994, the historical inventory is as follows:

88	<i>Dendrobates auratus</i> (41 captive born in 1982-1983)
6	<i>D. histrionicus</i>
3	<i>D. lehmanni</i>
4	<i>D. pumilio</i>
7	<i>D. typographus</i> (= <i>D. pumilio</i> Ed.)
14	<i>D. tinctorius</i> (9 captive born in 1993, but did not survive)
6	<i>Epipedobates tricolor</i>
18	<i>Phyllobates bicolor</i>

7 *P. terribilis*

7 *P. vittatus*

The following discussion reflects the recorded pathology reports of dendrobatid frogs at the Philadelphia Zoological Garden (PZG) from 1973 to 1990 (see Table 1). It is noted that the numbers necropsied do not tally with the number in the historical inventory. Some specimens are still alive, some specimens were lost to record at other institutions, and some specimens were not necropsied.

In the 72 cases reported, the majority of deaths (55) were undetermined. In part this is attributable to the lack of interest in amphibian pathology by the prosector, and the subsequent lack of histopathological specimens at pathology. It also is difficult to adequately prepare small tissue pieces for histopathology, and this may have discouraged interested prosectors from pursuing amphibian cases. A further complication is the fact that amphibians autolyze (decompose) rapidly post-mortem, especially if subjected to temperatures above 76°F. Twenty specimens were partially autolyzed, although some were severely enough decomposed to impede even a cursory analysis of the gross pathology. Current practice is to preserve the entire body of a dendrobatid frog and submit the entire frog for sectioning and histopathological slide preparation.

The husbandry practices for this group have improved remarkably in the past two decades, and has extended the expected longevity of zoo specimens from the 6-10 months that was the norm in the early 1970's, to current expected longevities of 40-60+ months. Obvious factors that impact longevity are improved enclosure design and environmental conditions (appropriate temperature, humidity, photoperiod, quality of light, etc.) as well as increased focus on nutrition and nutritional value of food insects. Dendrobatid frogs were not allotted large exhibit space, and it was only a comparatively recent finding that certain species establish significant territories which necessitates large enclosures for group maintenance. One major factor that may have contributed significantly to the lower longevity was the fact that the sex ratio was skewed toward males. Only 6 females were confirmed out of 72 frogs necropsied. Stress associated with cagemate aggression may be underlying many of the undetermined deaths in this report.

Renal lesions were implicated in four deaths. It is my clinical impression that many anuran cases of abdominal bloat from fluid retention (i.e. ascites) are due to renal disease. Hepatic disease and ovarian neoplasias account for many other cases of ascites. Unfortunately, these conditions do not respond well to therapeutic efforts thus ascites carries a grave clinical prognosis for any amphibian.

It should be noted that there was only one confirmed case of septicemia due to *Aeromonas hydrophila*, the causative agent of "red leg disease." It is my clinical impression that this is a relatively unimportant disease in captive populations of dendrobatid frogs, although undoubtedly some collections have experienced devastating pandemics (outbreaks of disease).

It is extremely disappointing the paucity of useful veterinary related information that is available on dendrobatid frogs. It is hoped that this report serves to increase interest in the pursuit of causes of mortality within private and public collections.

Table 1. CAUSE OF DEATH IN DENDROBATID FROGS AT PZG, 1973-1990

Undetermined

31.6.3	<i>D. auratus</i>	4.0 showed signs of emaciation; 2.0 showed signs of emaciation and dehydration; 1.0 appeared dehydrated; 0.1 incidental finding of ovum degeneration.
2.0	<i>D. lehmanni</i>	1.0 showed signs of emaciation.
3.0	<i>D. tinctorius</i>	1.0 showed signs of ascites.
6.0	<i>P. bicolor</i>	4.0 showed signs of emaciation and hepatic glycogen depletion; 1.0 showed signs of emaciation with adequate hepatic glycogen stores and intestinal nematodes. Note that all these animals were captive born elsewhere in 1988, and lived 6-8 months at Philadelphia.
3.0	<i>P. terribilis</i>	1.0 showed signs of emaciation and hepatic glycogen depletion; 1.0 showed signs of ascites.
2.1	<i>P. vittatus</i>	1.0 showed signs of emaciation and dehydration.
	Dehydration	
2.0	<i>D. auratus</i>	
	Emaciation	
4.0	<i>D. auratus</i>	1.0 showed signs of dehydration; 1.0 had unspecified parasites.
2.0	<i>D. tinctorius</i>	
	Other lesions	
0.1	<i>D. auratus</i>	Enteritis, urate renal granulomata
0.0.1	<i>D. auratus</i>	Bacterial enteritis, ascites, renal disease
1.0	<i>P. terribilis</i>	Hepatic microabscesses
1.0	<i>P. terribilis</i>	Chronic pyelonephritis
1.0	<i>P. terribilis</i>	Acute pyelonephritis
0.1	<i>D. tinctorius</i>	Septicemia (<i>Aeromonas hydrophila</i>), enteritis, splenomegaly.

HELPFUL HINTS

If you are having trouble with mold in your fruit-fly cultures try microwaving your cultures before adding flies. Mix the culture as you normally would then put a group of three or four jars together in a microwave and cook them on high for 3 to 4 minutes. Add additional water after they come out of the oven to make up for what has evaporated, then let them cool before adding flies. I have found that this has eliminated problems with molds developing in my cultures, and I have been told that it works for mites also, but I have not had that problem.

NEW LITERATURE:

Dendrobatidae

Anderson, Eric, 1994, Poison-dart frogs in captivity. *Reptiles*, 1(5): 24-26, 28.

Schulte, Rainer, 1980, Die Dendrobatiden Panamas, Teil3. *Phyllobates lugubris*. *Herpetofauna*, 4: 11-13.

_____, 1981, *Dendrobates bassleri*- Freilandbeobachtungen, haltung und Zucht. *Herpetofauna*, 12: 23-28.

Mantellinae

Busse, Klaus, 1981, Revision der Farbmuster-variabilität in der Madagassischen gattung *Mantella* (Salientia: Ranidae). *Amphibia-Reptilia*, 2: 23-42.

Mara, W. P., 1993, Keeping *Mantella* frogs in captivity. *Reptile & Amphibian Magazine*, 23: 20-27.

Mudrock, Wolfgang, 1974, Haltung und Zucht des Goldröschen, *Mantella aurantiaca* Moccquard, 1900. *Das Aquarium*, 58: 160-161.

Pintak, Thomas, 1990, *Mantella crocea* sp. n. (Anura: Ranidae: Mantellinae) aus dem mittleren Ost-Madagaskar. *Salamandra*, 26(1): 58-62.

ADDS: For Sale

<i>Dendrobates auratus</i> 'Hawaii'	\$25 ea.	Eric Anderson
<i>Dendrobates leucomelas</i> 'Orange'	\$60 ea.	12231 Newberry Rd.
<i>Dendrobates tinctorius</i> 'Cobalt'	\$40 ea.	Gainesville, FL 32607
<i>Dendrobates tinctorius</i> 'Brazil' (lots of yellow)	\$60 ea.	
<i>Epipedobates tricolor</i> (3 morphs)	\$30 to \$50 ea.	
Trio of adult		
<i>Dendrobates tinctorius</i> 'Cobalt'	\$70 ea.	
 <i>Epipedobates tricolor</i> (brick red with light blue stripes)	\$40 ea.	Patrick Nabors St. Louis Lizard Co. 9849 Manchester St. Louis, MO 63119 (800) 962-7280
 <i>Dendrobates imitator</i>	\$65 ea.	Charles Nishihara
<i>Dendrobates tinctorius</i> 'Cobalt'	\$35 ea.	3271 Pinao St.
Limited number of adult Santa Isabel		Honolulu, HI 96822
<i>Epipedobates tricolor</i>	\$75 ea.	
Four established <i>Mantella aurantiaca</i>	\$25 ea.	Charles Powell
Three established <i>Mantella crocea</i>	\$25 ea.	2932 Sunburst Dr. San Jose, CA 95111
 Captive breed Red-eye tree frogs		
<i>Agalychnis callidryas</i>	\$20-25 ea.	Rex Lee Searcey 27570 Villa Ave. Highland, CA 92346

Reptile Specialities (John Uhern, 10051 Commerce, Tujunga, CA 91042 Tel. (818) 352-1796; Fax (818) 353-7381) have various captive breed Dendrobatids imported from Germany for

sale. Write or call for information.

Wanted: Breeding Loans

Dendrobates leucomelas - male

Brice Noonan
2580 53rd Terrace SW
Naples, FL 33999
(813) 455 5385

Dendrobates azureus - female

Charles L. Powell, II
2932 Sunburst Dr.
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NEW MEMBERS

Peter B. Fippinger (Colorado)

Ron Gagliardo (Atlantia Botanical Gardens, Georgia)

Anthony Hundt (Illinois)

Dennis Mosley (Texas)

Patrick Nabors (St. Louis Lizard Co., Missouri)

John Uhern (Reptile Specialties, California)

Robert Samuels (Maryland)

Jack Wattley (Florida)

